

July 17, 1951

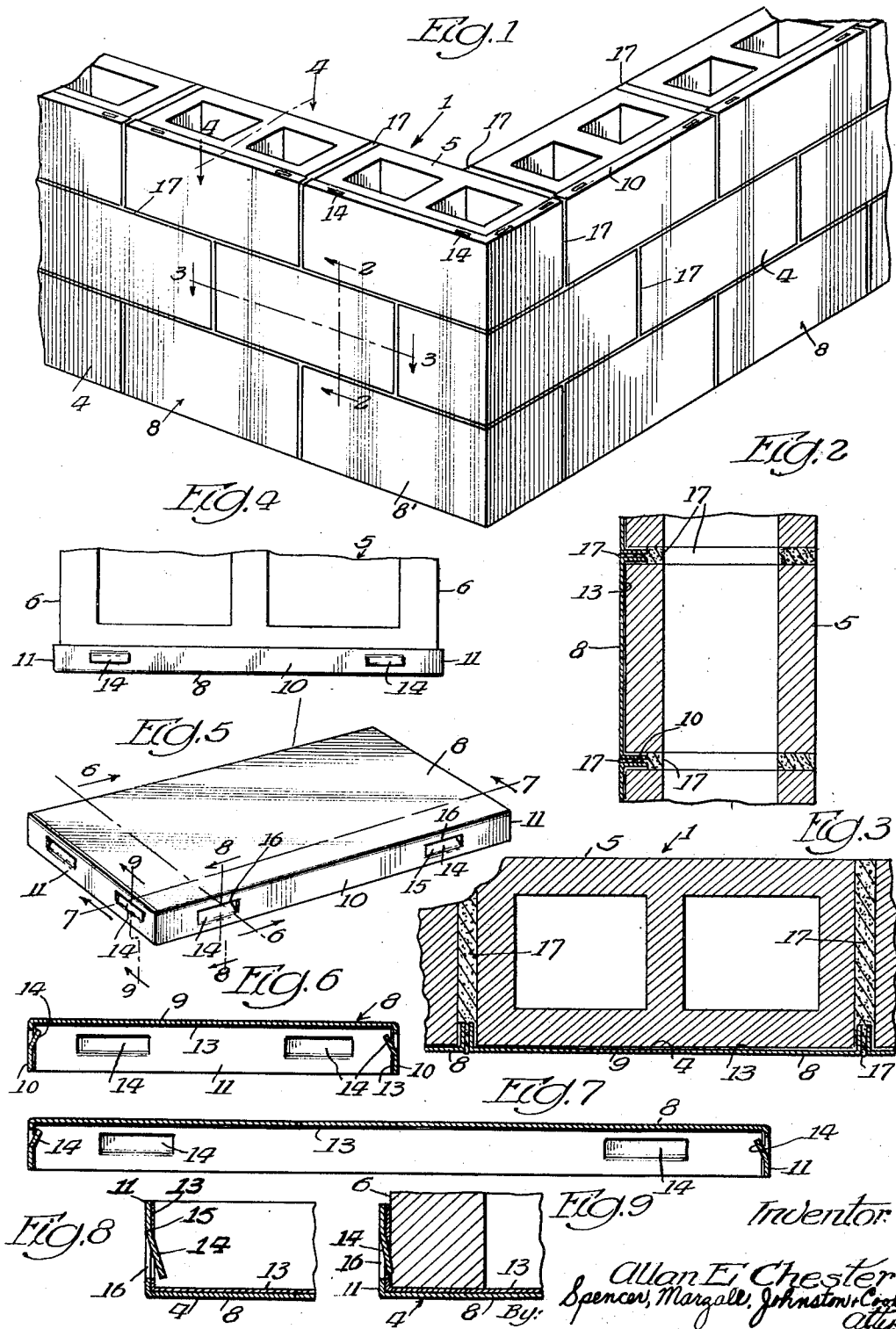
A. E. CHESTER

2,561,095

METAL FACED BUILDING BLOCK

Filed Oct. 10, 1945

2 Sheets-Sheet 1



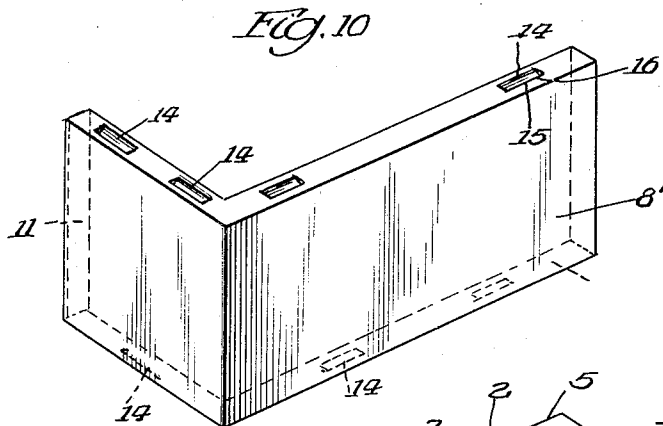
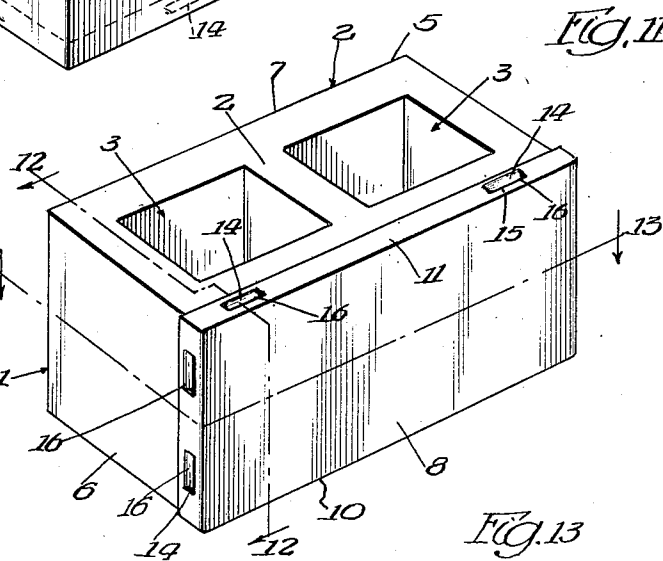
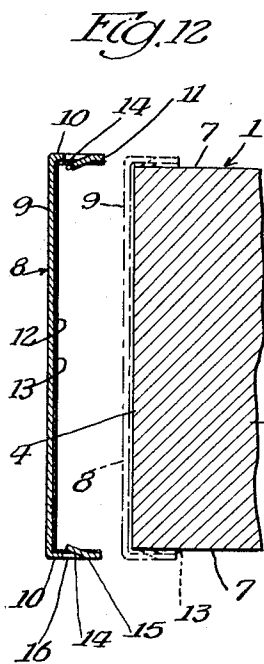
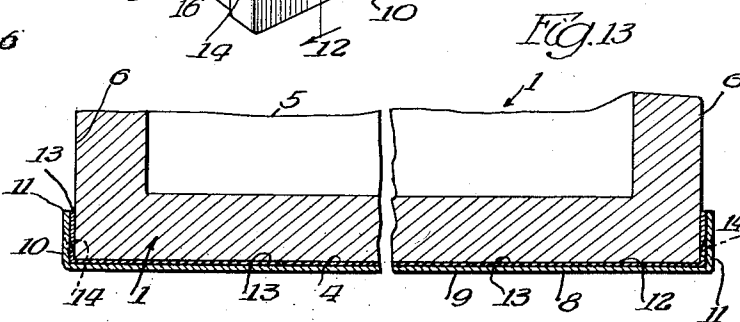
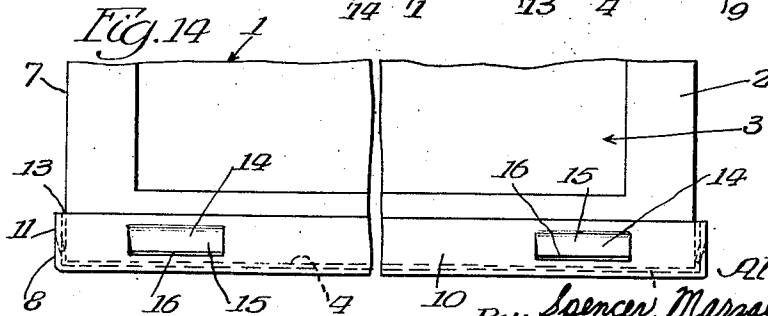
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,561,095

METAL FACED BUILDING BLOCK

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Application October 10, 1945, Serial No. 621,428

2 Claims. (Cl. 72—35)

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This invention relates to metal articles adapted for use in construction purposes, and includes the use of metal articles adapted to be applied to, over, or upon architectural members, elements or shapes for building purposes, such as standard concrete building blocks, bricks, tiles, terra cotta, panels, sheets, siding and other members or parts whereby there will be produced smooth, clean surfaces or walls for use either exteriorly or inwardly of buildings or other structures.

An important object of the present invention is the provision of an article in the form of a pan made of relatively thin gauge metal to render the article inexpensive to make and handle, the pan being coated to provide a durable surface which is weather resistant, ornamental, and easy to keep clean, the coating being relatively thin so as to permit flexing of the pan or other article to such a degree that damage to the coating is prevented when the pan is snapped on or otherwise set in place over a building element such as a block, brick or other member.

Another important object of the invention is the provision of a new and novel highly ornamental preformed article, member or element for use in the construction of buildings and other structures, wherein the said article, member or element has a backing of a predetermined material, such as concrete, brick, plaster, fiberboard and the like, with a facing of metal having a vitreous enamel, the metal being of a relatively thin gauge to permit easy handling, maintaining the cost low and permitting easy flexing, the vitreous enamel coating being thin enough to permit ease in handling and application of the metal facing over the backing without chipping, cracking or otherwise damaging the enamel coating.

A further object of the invention resides in the provision of a low fired vitreous enamel coating which may be applied to a light gauge metal covering without distorting or warping the metal, a condition which would prevail if the usual so-called high firing enamel were employed on thin gauge metal.

A still further object of the invention is the provision of a construction facing of thin gauge metal, preferably of 24 gauge, or thinner, having a thin vitreous enamel coating of .008 inch or less in thickness fired at a temperature low enough so as not to effect the physical character of the metal.

Still another object of the invention is to provide a drawn metal pan, or like covering, for construction material, for either internal or external use, the drawn metal pan being ductile so

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as to be snapped in place and stuck to the material with a mastic having a coefficient of expansion and contraction equal to the metal and the material, the mastic preventing capillary attraction of moisture, especially when one side of a wall is subjected to heat while the other side is cool or cold.

A still other object is to provide a thin gauge metal pan of 24 gauge or thinner with a thin coating of vitreous enamel all over the pan to render it waterproof throughout and having a finished vitreous enamel coating of one or more coatings of a complete thickness of not over .008 inch, the pan so treated being applied to a piece of construction material, such as a concrete block, by snapping the pan over the material, the pan being secured to the material by snapping the pan over the block and being secured to the block by a waterproof mastic.

A further object of the invention consists in providing a coated metal pan having its enclosing sides, or at least some of them, provided with inwardly struck edges to provide angulated fins or tongues to permit the pans to be applied easily over a construction piece coated with mastic or other material, or cement, but preventing easy removal of the pan when once applied.

A still further object of the invention relates to the method of making a unitary element for building construction purposes which consists in applying a thin metal pan in a particular manner to a concrete block or like element, the pan having a low fired vitreous enamel coating applied thereto.

Numerous other objects and advantages will be apparent throughout the progress of the following specification.

The accompanying drawings illustrate a selected embodiment of the present invention and the views therein are as follows:

Fig. 1 is a detail elevational view of a wall of a building at a corner thereof, and embodying the invention;

Fig. 2 is a detail vertical sectional view on the line 2—2 of Fig. 1;

Fig. 3 is a detail horizontal sectional view on the line 3—3 of Fig. 1;

Fig. 4 is an enlarged detail plan view of one of the block members and facing element;

Fig. 5 is a detail perspective view of an improved metal pan before its application to a piece of building material;

Figs. 6 to 9, inclusive, are detail sectional views on the lines 6—6, 7—7, 8—8 and 9—9, respectively, of Fig. 5;

Fig. 10 is a detail perspective view of one form of pan 8' adapted for use at the corners of buildings;

Fig. 11 is a detail perspective view of one form of construction piece, specifically a conventional concrete building block, and embodying the invention;

Figs. 12 and 13 are detail sectional views on the lines 12—12 and 13—13, respectively, of Fig. 11; and

Fig. 14 is a top plan view of Fig. 11.

The particular construction herein shown for the purpose of illustrating the invention comprises a construction piece adapted for use in wall structures of buildings, such as houses, filling stations, garages and the like. The construction piece shown specifically is a conventional concrete block 1 although other construction pieces or materials may be used, such as bricks, terra cotta blocks, siding and other elements.

The concrete block 1 is of the usual conventional type which for wall purposes is preferably made rectangular in shape. The shape, however, varies, depending upon the ornamentation of the building and whether the structure is to be used as copings, cornices, or other elements.

The block 1 is preferably provided with division walls 2 which define openings 3 (Fig. 11). These openings are desirable for insulating purposes in that they are dead air pockets. Another advantage is that these openings reduce the weight of the block considerably.

The block has a front or outer face 4, a rear face 5, end faces 6, 6 and opposed upper and lower surfaces 7, 7. If the block is to be used at a corner, as shown in Fig. 1, a side face 8 is exposed while the corresponding end face is arranged adjacent a corresponding face of another block.

The desirable feature of the concrete block is that it is of conventional form and is made in various cities and hamlets throughout the country, all being of the same size and shape. It is desirable, however, that the block being used has relatively straight surfaces as distinguished from concrete blocks which have their outer faces conformed to simulate stone.

The invention does not, of course, relate specifically to the construction of the block per se but relates to a building structure which is adapted to have applied thereto a metal surface which has a vitreous enamel coating.

The metal surface comprises a metal structure, such as a pan 8, Fig. 5, having an outer surface 9, turned in side walls 10, 10 and turned in end walls 11, 11. The pan 8 is preferably formed by stamping, drawing, or otherwise, a single sheet of metal, such as sheet metal. Another form of pan 8' for corner blocks is shown in Figure 10.

The inside dimensions of the metal pan 8 are somewhat larger than the external dimensions of the block 1 so that the pan 8 may be applied readily over or snapped onto the block 1. This pan 8 is applied over the block 1 with a mastic having a coefficient of expansion and contraction equal to that of steel and cement.

This mastic is preferably applied to the inner surface 12 of the pan and/or to the inner surfaces 10 and 11 of the sides and ends, respectively, as indicated at 13, Figs. 2, 12 and 13, so that the pan will be stuck securely to the block 1, but at the same time is relatively free floating, that is, is free to shift slightly, depending upon settling of the building, or other causes.

The mastic 13, covering the entire inner surfaces of the pan 8, prevents capillary moisture or

condensation from occurring on the inner face of the pan or on the outer side of the wall. The pan 8, having the mastic 13 applied thereto, is then snapped over the structure 1, as indicated in Figs. 2, 3, 12, 13 and 14, whereby there is provided a unit building block comprising the block 1 with the pan 8 applied thereover and stuck thereto by the mastic, as shown in Figs. 11 to 14, inclusive, particularly Fig. 11.

It is desirable that the pan 8 be applied quickly and readily over the block 1 but at the same time be prevented from being withdrawn easily. Also, it is desirable that there be a locking bond between the pan and the mastic as well as perhaps providing a locking bond between the pan and mortar joints which occur between the proximate unitary blocks. The means for providing this locking bond consists in providing a plurality of in-struck fins or vanes 14.

The fins or vanes 14 are preferably provided in each of the in-turned flanges 10, 10 and 11, 11, and are preferably struck out from the metal, being integrally attached thereto at the juncture 15. The juncture 15 occurs inwardly of the face 4 whereby the fin or vane will extend forwardly, as clearly shown in Figs. 6 to 9, inclusive, thereby permitting the pan easily to be slipped over the block 1 but preventing easy removal.

The striking in of the fins or vanes 14 provides depressions 16, Fig. 14, to make a tight mortar joint or bond, the material from which the pan 8 is made being of such ductility as to permit the fins or vanes 14 to be easily snapped over the block 1.

The block 1, having the pan 8 applied thereto in a tight waterproof condition, can be handled as a unit, as clearly shown in Fig. 14, and may be placed in a wall in the same manner as though there were no pan applied to the blocks at all and as shown in Fig. 1.

The unit block is put in the usual staggered relationship as shown in Fig. 1, with the side edges, tops and bottoms of the block spaced a predetermined distance from the adjacent respective surfaces of other blocks, just like putting bricks into a wall. Mortar is applied to the upper edge of the block and along the side edges thereof, and then a unit block, having the pan applied thereto, is placed in position with mortar, or other like material, conventionally used in brick and concrete block walls, whereby there is provided usually conventional mortar joints 17, Figs. 2 and 3.

It is desirable that the pan 8 be given a highly ornamental appearance as well as to render the pan waterproof. It is desirable, also, from the standpoint of economy that the ornamental facing on the pans be made of material that will stand up under severe weather conditions, and always maintain a surface which is highly ornamental, which may be colored, and which is waterproof. The pan, therefore, is vitreous enameled throughout to render it waterproof and to render an ornamental, clean, smooth exterior surface.

Vitreous enamel of the conventional form is relatively difficult to handle as it chips readily and ordinarily does not permit sufficient flexing so that it may be used on a metal pan which may be snapped over a building construction element. Vitreous enamel of the conventional type is not only expensive but requires a high fire which would tend to warp the sheet metal.

The invention further contemplates the use of a low fired vitreous enamel, and in some in-

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stances only one coat. In any case, however, it is desirable and practical that the vitreous enamel coating be not over .008 inch in thickness.

In carrying out the provisions of the invention it has been found in actual practice that various types of low fired enamel may be used.

Type 1

Type 1 consists in providing a vitreous enamel comprising a lithium-lead borosilicate of the type commonly designated as glass colors or jewelry enamel. This material is applied to the pan in any conventional manner, such as by dipping or spraying. It is then fired at a temperature ranging between 800 and 1180 degrees Fahrenheit, whereby there is provided a vitreous enamel having a solubility in a distilled water reflux of less than .250 gram loss from a 25 gram sample in eight hours.

Type 2

Another type of low fired vitreous enamel comprises an acid and weather resisting feldspathic borosilicate which is fired between 1000 and 1250 degrees Fahrenheit. This latter type of low fired vitreous enamel has the same solubility characteristics as the above Type 1 low fired vitreous enamel.

Type 3

Another type of low fired vitreous enamel consists of a silica free vitreous enamel high in phosphorous pentoxide (P_2O_5), which is stainless to fruit acids in a concentration of 10% by weight upon exposure to room temperature and citric acid for a period of not less than ten minutes or more than fifteen minutes.

Any one of the above three types of vitreous enamel is applied completely over the entire pan 8 whereby the inner and outer surfaces of the pan will be thoroughly waterproofed.

The vitreous enamel may be colored so that any particular color or color scheme, or combination thereof, may be had. The baking is very low and, therefore, the crystal structure of the metal will not change. Some forms of metal which have been used include sheet steel. It has been found that the crystal structure will change at a temperature of about 1280 degrees Fahrenheit. This low fired enamel, therefore, is fired at a temperature so as not to affect the physical or chemical characteristics of a metal, such as steel. Also, the temperature is low enough so as not to effect the spring action of the vanes or fins. The enamel coating is weather and acid resistant and is, therefore, capable for use on outside walls as well as inside walls.

The use of low fired enamel of the type above described will withstand a salt spray test of over 4,000 hours and, being low fired, may, therefore, be used on thin gauge metal, such as 24 gauge, or lighter. Also, because of the thinness of the coating of the enamel, whether one or more coats, and because of the characteristics of the vitreous enamel used, the pan will maintain its springiness and resiliency, permitting it to be snapped readily over the block without damage to the vitreous enamel and without in any way affecting the crystal structure of the steel.

It may be desirable in some instances to first roll the exterior surface of the pan so as to provide a series of serrations, or the like, before the vitreous enamel is applied. This action breaks up high lights to keep from too much reflection. Also, it prevents the showing up of

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imperfections and unevenness. Moreover, such an arrangement would make it easier to match up colors. In many instances, therefore, the metal, such as steel, at least the outer face, either before or after forming the pan, may be provided with indentations, serrations, or other like disfigurement, of the metal so that when the vitreous enamel is applied thereto, it will be held not only more securely to the pan, but will break up the high lights, imperfections and unevenness as above described.

The pan 8 is preferably drawn so as to make a single homogeneous complete integral pan. It may, however, be punched but the punching operation involves additional labor, and it is the aim of the present invention to provide a highly ornamental, waterproof, acid and weather resisting surface on relatively thin and inexpensive sheet metal pans so that the pans may be readily applied over the blocks or other elements to provide a composite unit adapted to be laid in a wall in a conventional manner, such as bricks are laid.

The invention provides a highly ornamental, practical, inexpensive coating adapted for application to inexpensive structures, such as building blocks, whereby highly ornamental, inexpensive buildings, such as filling stations, garages, houses and other structures may be built at a very low cost, requiring no upkeep. Buildings constructed in accordance with the present invention may have the exterior walls or inner walls, or both, constructed of clean, weather resisting surfaces for fireproof construction at an extremely low cost.

A filling station constructed in accordance with the present invention may be built as economically as a wooden structure, but no painting or other upkeep will be required. In cases where a metal pan may become damaged, the mortar between the blocks may be chipped out in the usual conventional manner, the pan removed, and a new pan applied in position. The work in applying a new pan in an existing wall is no more expensive than putting a new brick into an old wall.

Changes may be made in the form, construction and arrangement of the parts and the method may be varied within certain limits without departing from the spirit of the invention or sacrificing any of the advantages thereof, and the right is hereby reserved to make all such changes as fairly fall within the scope of the following claims.

The invention is hereby claimed as follows:

1. Building construction material comprising a building block and a facing member applied to the outer face of the block, said facing member embodying a metal body disposed adjacent but spaced from a face of the block and of an area slightly greater than the area of said face, a circumferential flange projecting inwardly from the periphery of said body and being spaced a slight distance from the proximate faces of the block to provide a space for the reception of a mastic-like material, and springy metal fastening means stamped inwardly from said flanges and integral therewith and inclined toward the body, said fastening means having straight angular edges and being sprung over the edge of the block and engaging the wall of the block.

2. Building construction material comprising a building block and a facing member applied to the outer face of the block, said facing member embodying a metal body disposed adjacent but spaced from a face of the block and of an area

slightly greater than the area of said face, a circumferential flange projecting inwardly from the periphery of said body and being spaced a slight distance from the proximate faces of the block to provide a space for the reception of a mastic-like material, springy metal fastening means stamped inwardly from said flanges and integral therewith and inclined toward the body, said fastening means having straight angular edges and being sprung over the edge of the block and engaging the wall of the block, and a thin vitreous enamel coating on the outer face of said facing member.

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